Master Thesis at FiBL Soil Science Division

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<th>Participatory organic cotton breeding in India (Madhya Pradesh)</th>
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**Context**

Organic cotton farming presents a viable and healthy alternative for small holders. However, involved producers are facing increased difficulties in finding suitable and adapted cultivars. Indeed, only few hybrids, selected for high input farming of genetically-modified (GM) cotton, which is explicitly excluded in organic farming, are dominating the seed market. Up to 80% of the world's organic cotton is produced in India with an increasing number of organic cotton projects throughout the country. Conversely in 2010, more than 80% of India’s cotton area is grown with GM Bt-cotton (Nemes 2010) and by 2011 this has increased to 90%. Since the market for non-GM seed has become completely eroded, there is little interest by private seed companies to further invest in this sector. On the other hand, farmers have lost their traditional knowledge on seed production. Hybrid seeds have to be purchased each season and therefore organic cotton farmers rely nowadays on a diminishing supply market of non-GM cotton seeds. Recent experience has been that available non-GM seeds is of dubious quality (expired, chemically pre-treated, segregating) and based on a few hybrids only selected for responsiveness to fertilizer and chemical pest control that might not be adapted to rain-fed and low input conditions (Felkl and Sahai 2010). While new cultivars are tested routinely under conventional growing conditions (Surulivelu 2011; Rathore and Palve 2011), no systematic variety trials have been conducted for organic and low input growing conditions.

This thesis aims at evaluating different types of cotton cultivars for their suitability for organic and low input farming in Central India combining on-station trials with on-farm participatory trials. The project is supported by the Research Institute of Organic Agriculture (FiBL) and local partners in India (bioRe India, University of Agricultural Science (UAS) Dharwad) and is a continuation of a program started in 2011.

The main goal of this study is to optimize the participatory breeding approach under organic and low input conditions in India.

- Evaluation of different cultivars types (varietal lines vs. hybrids) and *Gossypium* species (*hirsutum* (4x) vs. *arboreum* (2x)) under different farming systems, different input regimes and plant densities
- Identification of optimal plant type and plant density for low input conditions
- Establishing participatory breeding approaches together with farmers
- Implementation of participatory selection of F2 lines and F3 lines

**Procedure/Method**

On-station and on-farm field trials, morphological, agronomic and quality assessment, semistructural farmers interviews, documentation, statistical analysis and interpretation of data
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September 2012 (eventually two thesis possible)

Location
FiBL, Frick, Kanton Aargau  www.fibl.org
bioRe India Ltd, Madhya Pradesh, India

Language
English

Literature


